THE BIG IDEAS

Clock and Watches
And sun dials.

Time
And heartbeats.

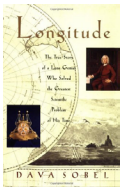
Longitude
And latitude.

Encouraging a Hero
How will you today?

Strengths
And weaknesses.

Rome (+ The Watch)
Wasn't built in a day.

Elegant Solutions
And the scientific establishment.



Longitude

The True Story of a Lone Genius Who Solved the Greatest Scientific Problem of His Time

BY DAVA SOBEL · WALKER BOOKS © 1995 · 224 PAGES

> "English clockmaker John Harrison, a mechanical genius who pioneered the science of portable precision timekeeping, devoted his life to this quest. He accomplished what [Isaac] Newton had feared was impossible: He invented a clock that would carry the true time from the home port, like an eternal flame, to any remote corner of the world."
>
> ~ Dava Sobel from *Longitude*

I got this book after my friend Zac Zeitlin told me about it after watching a +1 called "Got Watch?" (Thanks, Zac!)

That +1 was inspired by this quote from the great book *Make Time*: *"In 1714, the British government offered a £20,000 prize (that's $5 million in 2018 money), to anyone who could invent a portable clock that could be used aboard ships. It took nearly fifty years and dozens of prototypes until finally, in 1761, John Harrison created the first 'chronometer.' It was a technological marvel that changed the world even though it was barely portable—the clock had to be mounted in a special cabinet and stowed belowdecks for its maiden voyage across the Atlantic Ocean aboard the HMS Deptford."*

This book is basically "The True Story" of how, as per the sub-title, "a Lone Genius Solved the Greatest Scientific Problem of His Time." (<- The "Longitude" problem!)

It's a wonderfully written book by Dava Sobel, who combines her background in both astronomy and psychology to give us a behind-the-scenes look at the science and history of time, longitude, and seafaring all wrapped up in one epic heroic quest. If you're looking for a fun, quick-reading, mind-expanding escape from the normal self-development literature, I think you'll enjoy this hero-tale as much as I did. (Get a copy here.)

For now, I'm excited to share some wisdom from a few of my favorite Big Ideas we can apply to our lives Today, so let's jump straight in!

> "Having established itself securely on shipboard, the chronometer was soon taken for granted, like any other essential thing, and the whole question of its contentious history, along with the name of its original inventor, dropped from the consciousness of the seamen who used it every day."
>
> ~ Dava Sobel

CLOCKS AND WATCHES

"When I was a boy growing up in a small Ohio agricultural town, two sources of accurate time were available: the radio, which on the hour pronounced 'at the sound of the tone, the time will be . . . eastern standard time' and the bells of the courthouse clock, which was an important component of organizing the day. Some of the townspeople did not have wristwatches and depended on the courthouse bells for marking the beginning and end of the workday. Many did have watches, but they might lose or gain five minutes in five hours, requiring resetting several times a day, the accuracy of one's watch being a point of pride.

The courthouse dome rose high above the town's church steeples. Equally distributed around the barrel under the dome were four clock faces, each corresponding to one of the cardinal points of the compass. Schoolchildren were occasionally permitted to tour the courthouse tower, which when viewed from ground level appeared to be a modest structure. But to the students exploring

the inside, the interior was cavernous, criss-crossed by dust-covered beams and braces. The clock faces were gigantic, the hands longer than the children were tall. The experience imparted a vivid memory: Clocks were important."

That's from the Foreword written by Neil Armstrong—the first person to walk on the moon. Before we jump into our discussion... Quick question: What time is it?

Easy answer, eh? One quick glance at our wristwatch (or smartphone or laptops) and voila! We know *exactly* what time it is. Much like ALL (!) the other modern conveniences we enjoy, it's *really* easy to take that for granted, but...

Get this: There was a time not too long ago when a sundial (!) was our best bet at approximating the time. Armstrong was a kid in the 1930's and 1940's. Less than a HUNDRED year ago, knowing the precise time was a luxury. In the 1700's sundials were still the main way to tell time. (SUNDIALS!!)

Enter: A guy you've probably never heard of: John Harrison. "A man of simple birth and high intelligence," we have HIM to thank for dedicating his entire (!) life to solving the greatest scientific problem of his time (figuring out how to calculate longitude while out at sea) which led to a precision in timekeeping that revolutionized the world.

To put it in perspective: *"Harrison's clocks never erred more than a single **second** in a whole **month**. In comparison, the very finest quality watches being produced anywhere in the world at that time, drifted off by about one **minute** every **day**. The only thing more remarkable than the Harrison clocks' extraordinary accuracy was the fact that such unprecedented precision had been achieved by a couple of country bumpkins working independently—and not by one of the masters such as Thomas Tompion or George Graham, who commanded expensive materials and experienced machinists in the clock centers of cosmopolitan London."*

P.S. I recently watched the documentary *Apollo 11*. HIGHLY recommend it.

" I wasted time, and now doth time waste me;
For now hath time made his numbering clock;
My thoughts are minutes."

~ William Shakespeare, Richard II

TIME

"Time is to clock as mind is to brain. The clock or watch somehow contains the time. And yet time refuses to be bottled up like a genie stuffed in a lamp. Whether it flows as sand or turns on wheels within wheels, time escapes irretrievably, while we watch. Even when the bulbs of the hourglass shatter, when darkness withholds the shadow from the sundial, when the mainspring winds down so far that the clock hands hold still as death, time itself keeps on. The most we can hope a watch to do is mark that progress. And since time sets its own tempo, like a heartbeat or an ebb tide, timepieces don't really keep time. They just keep up with it, if they're able."

Time. Let's see if we can rustle up some more poetically powerful thoughts on the subject.

Aristotle tells us: *"We live in deeds, not years; In thoughts not breaths; In feelings, not in figures on a dial. We should count time by heart throbs."*

Benjamin Franklin tells us: *"Dost thou love life? Then do not squander time; for that's the stuff life is made of."*

Today we have 24 hours made up of 1,440 minutes and 86,400 seconds. How will you use them?

LONGITUDE

"Here lies the real, hard-core difference between latitude and longitude—beyond the superficial difference in line direction any child can see: The zero-degree parallel of latitude is fixed by the laws of nature, while the zero-degree meridian of longitude shifts like the sands of time. The difference makes finding latitude child's play, and turns the determination of longitude, especially at sea, into an adult dilemma—one that stumped the wisest minds of the world for the

" It took about four hours to calculate the time from the heavenly dial-when the weather was clear, that is. If clouds appeared, the clock hid behind them."

~ Dava Sobel

better part of human history. ...

The measurement of longitude meridians, in comparison, is tempered by time. To learn one's longitude at sea, one needs to know what time it is aboard ship and also the time at the home port or another place of known latitude—at that very same moment. The two clock times enable the navigator to convert the hour difference into a geographical separation. Since the Earth takes twenty-four hours to complete one full revolution of three hundred sixty degrees, one hour marks one twenty-fourth of a spin, or fifteen degrees. And so each hour's time difference between the ship and the starting point marks a progress of fifteen degrees of longitude to the east or west. Every day at sea, when the navigator resets his ship's clock to local noon when the sun reaches its highest point in the sky, and then consults the home-port clock, every hour's discrepancy between them translates into another fifteen degrees of longitude."

Before we jump into some heroic-quest wisdom, let's take a moment to wrap our brains around the difference between latitude and longitude and *briefly* reflect on WHY solving the longitude problem was once the biggest challenge of an era.

Latitude? Those are the parallel lines running east/west starting at the equator. They're relatively easy for navigators to find. Apparently Columbus sailed "the parallel" in 1492.

Longitude? That's a LOT harder to figure out. As per Dava's brilliant description above, we need to know the TIME of our home port (or another place of known latitude) in order to figure out where we are from a longitudinal perspective. Why does that *really* matter?

Because there used to be a LOT of shipwrecks as a result of not knowing exactly where you were in the water! Oops. Enter: The multimillion-dollar prize mandated by the Longitudinal Act issued in the reign of Queen Anne on July 8, 1714.

ENCOURAGING A HERO

"Somehow, John as a teenager let it be known that he craved book learning. He may have said as much aloud, or perhaps his fascination for the way things work burned in his eyes so brightly that others could see it. In any case, in about 1712, a clergyman visiting the parish encouraged John's curiosity by letting him borrow a treasured textbook—a manuscript copy of a lecture series on natural philosophy delivered by mathematician Nicholas Saunderson at Cambridge University.

By the time this book reached his hands, John Harrison had already mastered reading and writing. He applied both skills to Saunderson's work, making his own annotated copy, which he headed 'Mr. Saunderson's Mechanicks.' He wrote out every word and drew and labeled every diagram, the better to understand the nature of the laws of motion. He pored over this copybook again and again, in the manner of a biblical scholar, continuing to add his own marginal notes and later insights over the next several years. The handwriting throughout appears neat and small and regular, as one might expect from a man of methodical mind."

A few things (and people) came to mind as I read that.

First, Twyla Tharp. In *The Creative Habit*, she says this about the power of copying: *"If there's a lesson here it's: get busy copying. That's not a popular notion today, not when we are all instructed to find our own way, admonished to be original and find our own voice at all costs! But it's sound advice. Traveling the paths of greatness, even in someone else's footprints, is a vital means to acquiring skill."*

Then, Joseph Campbell. In *The Power of Myth*, Bill Moyers asks: *"Do you ever have this sense when you are following your bliss, as I have at moments, of being helped by hidden hands?"*

Campbell says: *"All the time. It is miraculous. I even have a superstition that has grown on me as a result of invisible hands coming all the time—namely, that if you do follow your bliss*

" Indeed, some modern horologists claim that Harrison's work facilitated England's mastery over the oceans, and thereby led to the creation of the British Empire—for it was by dint of the chronometer that Britannia ruled the waves."

~ Dava Sobel

you put yourself on a kind of track that has been there all the while, waiting for you, and the life that you ought to be living is the one you are living. When you see that, you begin to meet people who are in the field of your bliss, and they open the doors to you. I say, follow your bliss and don't be afraid, and doors will open where you didn't know they were going to be."

Finally, I think of the clergyman who gave young Harrison that book. That act of encouragement and kind generosity LITERALLY changed not only John's life but our world. (LITERALLY.)

So... How will YOU encourage a young potential Hero today, my friend?

STRENGTHS AND WEAKNESSES

"Summarizing the essence of his conversion chart in a handwritten heading, Harrison called it 'A Table of the Sun rising and Setting in the Latitude of Barrow 53 degrees 18 Minutes; also of difference that should & will be betwixt ye Longpendillom & ye Sun if ye Clock go true.' This description owes its quaint sound partly to its antiquity, and partly to ambiguity. Harrison, according to those who admired him most, never could express himself clearly in writing. He wrote with the scrivener's equivalent of marbles in the mouth. No matter how brilliantly ideas formed in his mind, or crystallized in his clockworks, his verbal descriptions failed to shine with the same light. His last published work, which outlines the whole history of his unsavory dealings with the Board of Longitude, brings his style of endless circumlocution to its peak. The first sentence runs on, virtually unpunctuated, for twenty-five pages."

Harrison's watches were not only astonishingly accurate. They were equally beautiful. (If you feel so inspired, take a quick look at pictures of John Harrison's watches. They're STAGGERING works of artistic and mechanical genius. Especially H-4. Wow.)

So... Let's appreciate his genius. Now, let's reread that sentence. (Hah!) Alas, there are no perfect human beings. Thank goodness that Harrison tripled down on his strengths.

I thought of this Drucker wisdom as I laughed at the marbles in his metaphorical mouth as a writer vis-a-vis his absolute genius as a clockmaker: *"The idea that there are 'well rounded' people, people who have only strengths and no weaknesses (whether the term used is the 'whole man,' the 'mature personality,' the 'well-adjusted personality,' or the 'generalist') is a prescription for mediocrity if not for incompetence. Strong people always have strong weaknesses too. Where there are peaks, there are valleys. And no one is strong in many areas. Measured against the universe of human knowledge, experience, and abilities, even the greatest genius would have to be rated a total failure. There is no such thing as a 'good man.' Good for what? is the question."*

So... How are YOUR strengths?

One more gem from Drucker worth keeping in mind: *"All in all, the effective executive tries to be himself; he does not pretend to be someone else. He looks at his own performance and at his own results and tries to discern a pattern. 'What are the things,' he asks, 'that I seem to be able to do with relative ease, while they come rather hard to other people?'"*

ROME WASN'T BUILT IN A DAY

"Rome wasn't built in a day, they say. Even a small part of Rome, the Sistine Chapel, took eight years to construct, plus another eleven years to decorate, with Michelangelo sprawled atop his scaffolding from 1508 to 1512, frescoing scenes from the Old Testament on the ceiling. Fourteen years passed from the conception to the completion of the Statue of Liberty. The carving of the Mount Rushmore Monument likewise spanned a period of fourteen years. The Suez and Panama Canals each took about ten years to excavate, and it was arguably ten years from the decision to put a man on the moon to the successful landing of the Apollo lunar module.

It took John Harrison nineteen years to build H-3."

I repeat: Rome wasn't built in a day. Neither was the Sistine Chapel. Or the Statue of Liberty. Or Mount Rushmore. Or the Panama and Suez Canals.

Take a moment to IMAGINE being Michelangelo sprawled atop your scaffolding painstakingly painting the frescoes that now adorn the ceiling of the Sistine Chapel. For FOUR YEARS!!! Repeat with all the other great things ever created. Let's keep that in mind as we approach OUR work like dedicated Professionals and craftsmen (and women).

Now let's focus on Harrison and his third attempt at creating a precise, portable seaworthy watch that would solve the Longitude problem. As Dava points out, it took him NINETEEN years to create it.

But get this. After first hearing about the prize for solving the Longitude problem, Harrison spent FOUR years just THINKING about it. Then, after getting positive feedback and support on his preliminary ideas, he spent FIVE years creating his first version, called H-1.

That one was really good but didn't meet his standards. So he spent ANOTHER FIVE YEARS creating his second version, H-2. So... Before we even *get* to the nineteen (!) years invested in H-3, we've ALREADY spent FOURTEEN years on the project. (And, of course, that doesn't count all the time that came before *that* during which Harrison was logging his hours becoming a master carpenter and self-taught clockmaker.)

For those doing the math, that's THIRTY-FOUR years of his life. And that's still just the third version. It was the FOURTH one that proved successful. And, even *that* one wasn't received with celebration. He had to endure many more years of continued effort in the face of constant opposition before his creation was finally accepted as the best solution to the problem.

(I got tired just typing all that, imagining how hard he worked. Hah.)

I'm reminded of Odysseus' TWENTY-year heroic quest. Then there's John Wooden. You remember how many years he coached at UCLA before he won his first championship? Sixteen. (And, that doesn't count all the years of coaching *before* he even arrived at UCLA let alone all the years of study and practice he put in as a player.)

Yep. Rome wasn't built in a day. Let's roll up our sleeves and get back to work, loving (!) the process and, like a true master, keeping these words of wisdom from George Leonard ever in mind: *"For a master, the rewards gained along the way are fine, but they are not the main reason for the journey. Ultimately, the master and the master's path are one. And if the traveler is fortunate—that is, if the path is complex and profound enough—the destination is two miles farther away for every mile he or she travels."*

SIMPLE SOLUTIONS + SCIENTIFIC ESTABLISHMENTS

"The admirals and astronomers on the Board of Longitude openly endorsed the heroic lunar distance method, even in its formative stages, as the logical outgrowth of their own life experience with sea and sky. By the late 1750s the technique finally looked practicable, thanks to the cumulative efforts of the many contributors to this large-scale international enterprise.

In comparison, John Harrison offered the world a little ticking thing in a box. Preposterous!

Worse, this device of Harrison's had all the complexity of the longitude problem already hardwired into its works. The user didn't have to master math or astronomy to gain experience to make it go. Something unseemly attended the sea clock, in the eyes of scientists and celestial navigators. Something facile. Something flukish. In an earlier era, Harrison might have been accused of witchcraft for proposing such a magic-box solution. As it was, Harrison stood alone against the vested navigational interests of the scientific establishment. He became entrenched

in this position by virtue of his own high standards and the high degree of skepticism expressed by his opponents. Instead of the accolades he might have expected for his achievements, he was to be subjected to many unpleasant trials that began after the completion of his masterpiece, the fourth timekeeper, H-4, in 1759."

" With his marine clocks, John Harrison tested the waters of space-time. He succeeded, against all odds, in using the fourth-temporal-dimension to link points on the three-dimensional globe. He wrested the world's whereabouts from the stars, and locked the secret in a pocket watch."

~ Dava Sobel

I read this book the day after I finished reading a book called *The End of Alzheimer's*. That book is all about, as per its sub-title: "The First Program to Prevent and Reverse Cognitive Decline." The parallels between that book and this passage are profound.

As you may know, the currently accepted scientific dogma regarding Alzheimer's disease is that there's basically no way to prevent it and there's *definitely* no way to REVERSE it. Much like John Harrison, Dr. Dale Bredeson has spent his entire life trying to solve one of our era's greatest scientific challenges. And, much like Harrison, he has discovered a solution that is WAY simpler than what the "scientific establishment" considers possible.

Short story: Rather than look for a single drug that magically resolves the *symptoms* of Alzheimer's, Bredeson has developed a protocol that addresses the underlying metabolic and cognitive *systems* *causing* all the problems in the first place.

How? Super basic stuff like nutrition, exercise, sleep, meditation, etc. His protocol has achieved CRAZY powerful effects. The first approach to EVER (!) REVERSE Alzheimer's. The response from the scientific establishment? Nearly identical to Harrison's.

Bredeson himself, a member of the scientific elite who has spent his career at some of the premiere institutions (Caltech, Duke, UCSF, UCLA) says that *"If someone had told me a few decades ago that, as a research neurologist, I would be recommending protocols that involve meditation, yoga, laughter, music, joy, fasting, exercise, herbs, nutrition, and sleep, I would have laughed. But I cannot argue with results, or with the conclusions of years of research."*

So, yah. Much like the astronomers of the 18th century looking for a REALLY complex solution to longitude via a hard-to-pin-down heavenly map, the leading scientists of OUR day are often looking in the wrong direction as they try to solve not only Alzheimer's but also cancer, diabetes, obesity, heart disease and, well, most of the chronic illnesses created by our modern lifestyles.

Longer chat, but... What if it wasn't THAT complicated? What if an 80/20 focus on the essential aspects of our core fundamentals can help us Optimize and actualize while avoiding the chronic illnesses that plague our modern world? Eat. Move. Sleep. Breathe. Be Present. Prosper.

For now: How can you simplify and Optimize just a little more Today?

Brian Johnson,
Lover of Wisdom

If you liked this Note, you'll probably like…

Make Time

Dr. Seuss and Mr. Geisel

The End of Alzheimer's

About the Author of "Longitude"

DAVA SOBEL

Dava Sobel is the bestselling author of *Longitude, Galileo's Daughter, The Planets*, co-author of *The Illustrated Longitude*, and editor of *Letters to Father*. She lives in East Hampton, New York.

About the Author of This Note

BRIAN JOHNSON

Brian Johnson loves helping people optimize their lives so they can actualize their potential as he studies, embodies and teaches the fundamentals of optimal living—integrating ancient wisdom + modern science + practical tools. Learn more and optimize your life at optimize.me.